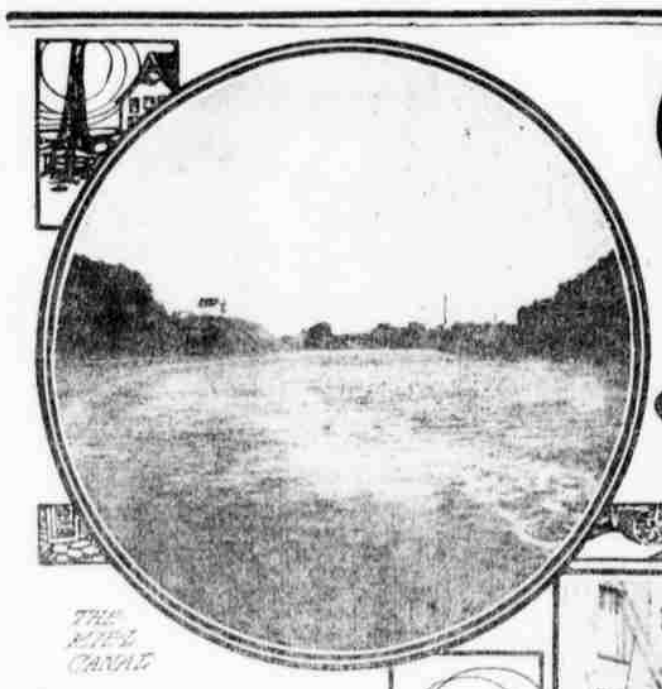
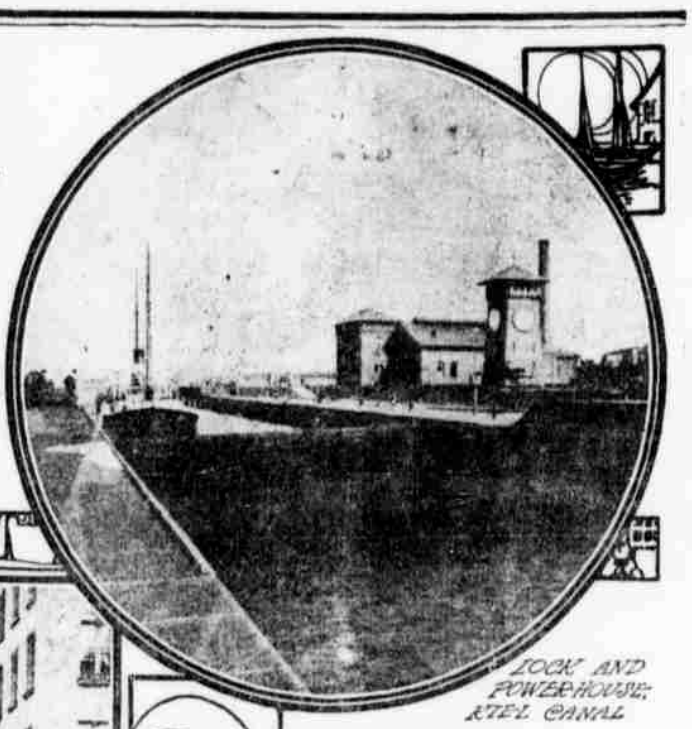
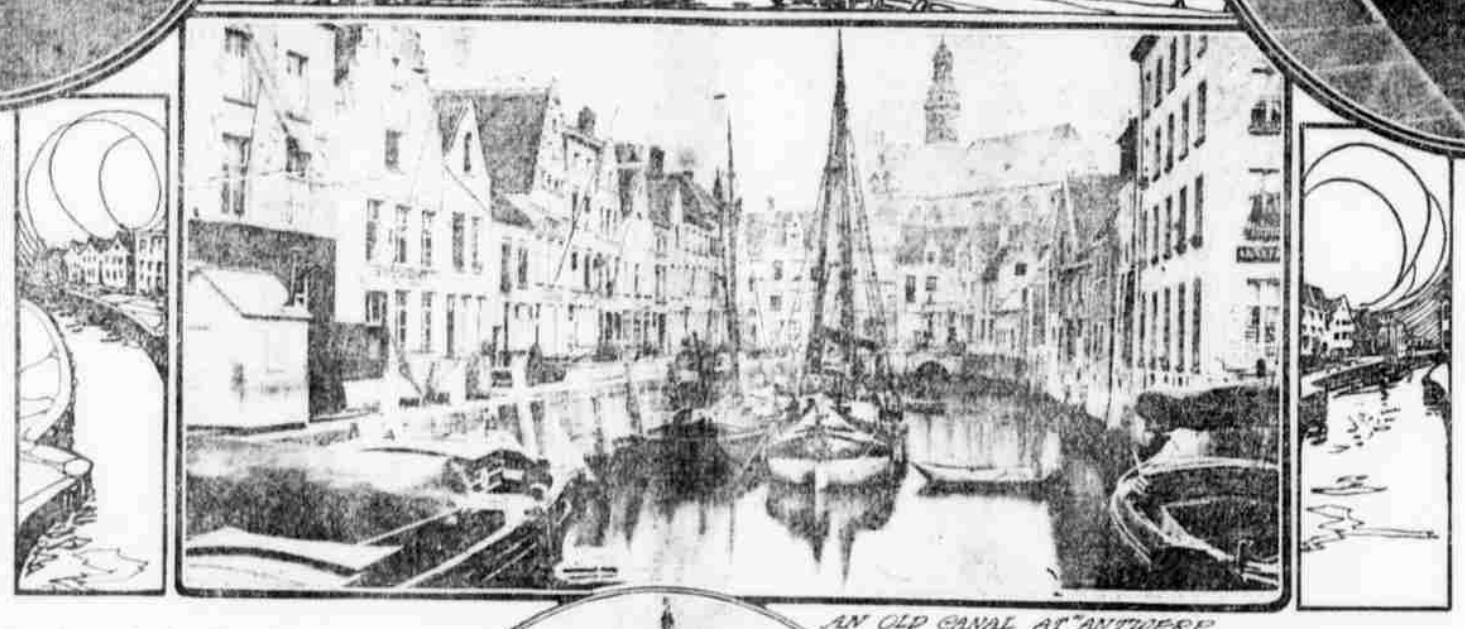
COMMERCIAL IMPORTANCE of CANALS

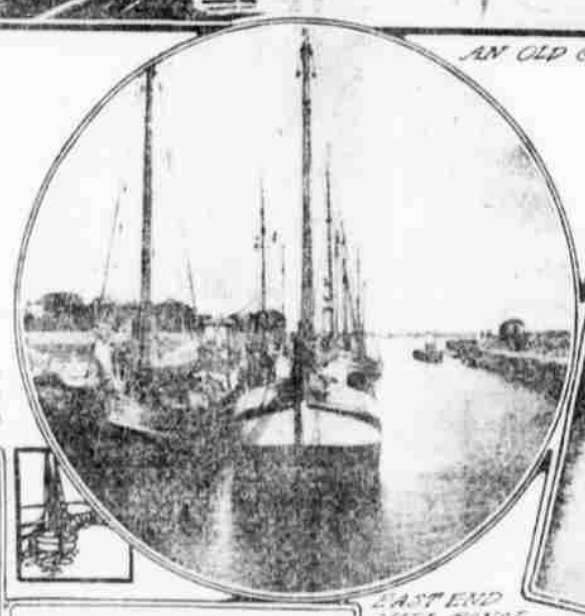


THE KIEL CANAL

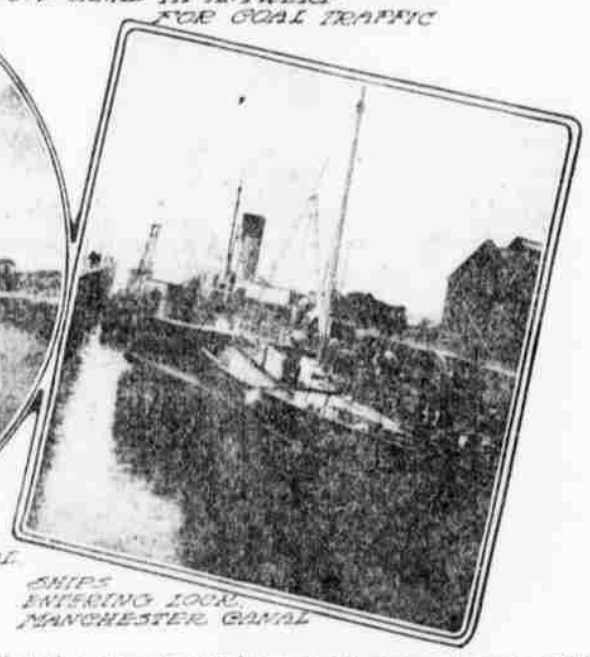


LOCK AND POWER HOUSE, KIEL CANAL



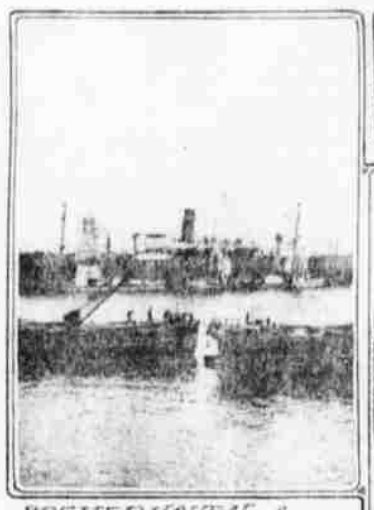


AN OLD CANAL AT ANTWERP

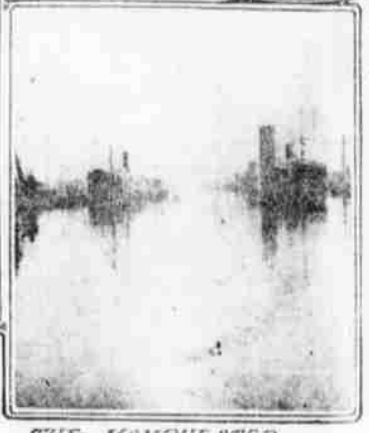


EAST END KIEL CANAL

SHIPS ENTERING LOCK, MANCHESTER CANAL



BREMER HAVEN, A STEAMER UNLOADING GRAIN



THE MANCHESTER TERMINUS OF THE CANAL

Of all the continental countries France has spent the most on canal navigation. Her extensive plans for waterway development, adopted in 1878, provided for a system by which the waterways should be all connected with each other, and with the chief centers of population and industry. They are mainly owned or controlled by the state, but when in 1903 a law was passed providing for the construction of new waterways, it stipulated that the beneficiary parties or localities must advance at least half of the total cost. The interests making this contribution are permitted to recoup themselves from tolls or dues, and from a monopoly of providing towage or traction. Three canals, one from Cette to the Rhone, one from Marseilles to the Rhone, and one from the coal fields to the Oise river—the Canal du Nord—are now being constructed under these conditions.

The most important of the commercial waterways of France is the Seine river, and there is an immense traffic upon it between Havre and Rouen and Paris. At large expense it has been canalized and provided with locks and lateral canals, while other canals connect the river through its tributaries with the Loire, the Rhone, the Rhine, the Meuse and the Scheldt. Another elaborate system of main and lateral canals that carries a vast tonnage to Paris connects the capital with Dunkirk and Gravelines, and between Paris and the Belgian and German frontiers there is a perfect network of waterways. The western and southern parts of the country are nearly as well provided with canals. The Canal du Midi, which, running from Bordeaux to Cette, connects the Bay of Biscay with the Mediterranean, enables the former city to supply the whole of southern France with the products of foreign lands, and of the French colonies which it imports.

In connection with this Canal du Midi, the French government has long under consideration a most interesting and important project—nothing less than to convert the waterway into a ship canal by which sea-going vessels and the warships of France could pass from the Atlantic to the Mediterranean without being exposed to the violent storms of the peninsular coast and without passing through the Straits of Gibraltar. The people of France never lose sight of the possibility of war with Great Britain, and this ship canal plan appeals to them especially because it would relieve their navy from the necessity of steaming under the thousand guns that arm King George's tremendous fortress on the rock. So the project seems almost equally important from a commercial and a military view, and doubtless will be carried out.

Altogether, France has nearly 2,000 miles of canals and 5,000 miles of navigable rivers, and in the last 25 years the rate of increase as regards tonnage and ton-mileage has been more rapid on the waterways than on the railways.

In the Rhine and the Elbe, Germany possesses two commercial waterways of the first magnitude. The Rhine is navigable for small river steamboats as far as Basel, just across the Swiss frontier, and small sea-going steamers ascend it as far as Mannheim. This mighty river has been improved by the Germans at a cost of more than $12,500,000, and its waters bear an immense traffic in coal, iron ore, iron and steel manufactures and other heavy freight. The Rhine valley, dotted with picturesque ruined castles and saturated with legend and romance, is also one of the busiest districts in all Europe, for it is densely populated and contains numerous important industrial cities. Canals connect the Rhine with the Meuse, Saone, Seine, Danube and Ems rivers. The Rhine-Rhone canal follows the course of the river from Strassburg almost to Basel, and is generally used instead of the river.

The Elbe is second only to the Rhine in commercial importance. It is navigable throughout its whole course in Germany and along it lie some of the chief silver and coal mines, salt fields, sheep pastures and beet-root areas in the empire. Moreover, it links Berlin, the capital, with Hamburg, the chief port, by the canals of the Havel and Spree river systems.

The Weser, the Oder, the Vistula and other rivers are of great importance as commercial highways, and go to make up Germany's grand total of nearly 6,000 miles of navigable rivers, of which about 1,400 miles are canalized.

Germany's canals are many, their total mileage being something like 1,500, and large sums are spent on their improvement. The most important internationally is the great North Sea and Baltic ship canal, which traverses Schleswig-Holstein, saving two days' time by steamer between Hamburg and all the Baltic ports of Germany. This canal was begun in 1887 and was opened to traffic in 1895, and is a source of much pride to Emperor William. The Ludwigs canal in Bavaria united the Danube with the Main, thus supplying a continuous waterway from the North sea to the Black sea. The Plauen canal connects the Elbe with the Havel, and there are systems connecting the Oder with the Elbe and the Memel with the Pregel.

A waterway expert has said that there are too many small craft on the German canals to keep the cost of transportation down as low as it might be, but the government's charges for lockage are small so that rates are very reasonable and the total of heavy traffic is large.

Through close and effective study of economical transportation, Belgium has built up an excellent system of canals and canalized rivers, 29 in number. These are used partly for transportation and partly for irrigation. Both the Meuse and the Scheldt are navigable throughout their entire length in Belgium, and many of their tributaries have been canalized. In addition to these natural advantages, there are canal systems that unite Brussels and Louvain with the Rupel, Brussels with Charleroi and Mons with Conde. Then, too, there are two fine ship canls which by uniting Ghent and Bruges with the sea coast have restored to those cities much of their old time commercial importance.

Mention of Holland instantly creates a mind picture of canals, and indeed that little land of dykes and ditches is completely cut up into small islands by its extensive system of waterways. They cross and interlace one another like the threads of some large fishing net. The North Holland canal was considered, until recently, to be the finest of the kind in Europe. The southern part of the country is especially favored by nature, for the Rhine, entering Holland, divides up into numerous arms, the chief of which are the Waal, the Lek and the Yssel. The Meuse joins the Waal, thus mingling its waters with those of the Rhine, and all of these rivers carry an immense traffic. Four-fifths of the river trade of Holland is carried on the Rhine and the Waal. The Scheldt has its estuary mainly in Holland and carries ocean vessels to Antwerp.

Owing to the level condition of the country, the construction of a canal in Holland involves but comparatively little labor and expense. Many of the canals are used constantly as substitutes for public highways, and in the winter their frozen surfaces offer convenient roads for the skaters who throng them on their way to and from market and about their various occupations. So complete is the canal system that by means of it a resident of Rotterdam could breakfast at Delft or The Hague, dine at Leyden and sup at Amsterdam, or return to his home before nightfall. Since not only the surface but the beds of many of Holland's canals are above the level of land, the drainage is of the greatest importance. This is effected by means of pumps worked by the windmills that are such a characteristic feature of the Dutch landscape. The banks of the canals are maintained by the families that live along them, each being assigned a portion to keep in repair.

Emory R. Johnson, professor of transportation and commerce in the University of Pennsylvania, who recently made a study of European waterways, as the special representative of the National River and Harbor congress, calls attention to the way in which Germany, France, Holland and Belgium have co-operated in establishing standard dimensions for their canals and barges, and connecting their systems. In this manner the through shipment of international traffic has been facilitated. "Another feature of the waterway policy of these European countries," he says, "is that care is taken to provide waterways with adequate terminal and harbor facilities, and to make such physical connections between railroads and waterways at all inland harbors as to guarantee the easy and economical transfer of traffic from cars to boats and water to rails. It is realized that terminal facilities and rail connections are as essential a part of the projects for making waterways useful as are reliable channels of adequate width and depth. The Rhine river, for instance, has 62 harbors equipped as fully as commercial needs require, with storage and transfer facilities. At 43 of these terminals the direct transfer of goods from trains to boats and river to rail is possible. Many of the harbors include large basins, some of which are used for the transfer and storage of commodities, while others are constructed to enable big industrial plants to locate on water frontage. Each city constructs its own harbor with but little, if any, aid from the state, the expense being borne by the city, aided in some instances by private interests."

How Vegetarianism Hurts Us

By M. A. LANE, SC. B.,

(Former Research Fellow in Physiology, University of Illinois.)

I sometimes despair for the future of the human race when I see some poor man or poor woman trying to worry along through an all-too-limited and not over-joyous life on a diet that is fit only for guinea pigs, rabbits and kine.

I have no quarrel with the vegetarian or with his "principles;" in fact, I don't know and have never been able to find out just what his principles are. But I'm sorry for him. I once knew a young man who was trying to do the very hardest kind of work—the mixed kind, which is physical and mental, too—on a diet that a healthy rabbit would hesitate about adopting unless guaranteed that the quantity would be absolutely unlimited. This young man would make a breakfast of a bit of bread, a small plate of boiled rice, and a glass of water; he would luncheon on a small quantity of butter-beans, or some other equally insubstantial airy nothing, and then he would top off the day with a piece of cake and a cup of tea—always weak tea, too.

Occasionally he would go on what might be called a veritable "feeding bat," and would wildly dissipate on two bananas for breakfast, boiled rice with green corn and an apple for luncheon, and a "lentil cutlet," with two bananas for dinner! And after this desperate plunge into the flesh pots of Egypt he would always feel as guilty as if he had just robbed a safe and could hear the police coming to take him in.

You couldn't persuade that young man that he was slowly but certainly killing himself. Had you stood him up before all the physiologists of the world, to be assured by them not only on their reputation as men of science, but on their decency and honor as men, that that sort of a diet was never "intended," by any scheme of nature or any deity imaginable, for the human machinery of digestion, he would probably have come out of the seance with a vague idea that somehow or other they were just trying to foo' him for some hidden and vicious purpose of their own.

It would be a good thing if all men and all women were early in their youth put through a course of study—I mean actual study, from the thing and not from the book, which is worse than useless, not even being useless—on the vast differences between the digestive apparatus of the plant-eating animal and that of the meat-eating, or omnivorous, animal, such as man.

The young vegetarian mentioned above was very brave; as brave as anybody could be in such circumstances and on such a diet, but he would often look with longing eyes on the steaks and chops his companions consumed at table, while he himself was sturdily punishing himself with rice and other wholly unsavory dishes. Also he was rather dim of eye and not specially active on his feet or at his work. And although he might not have admitted it were he charged with it, I knew he was afflicted with a disorder of the digestive apparatus that always accompanies vegetarianism. He was, in fine, the victim of a prejudice that left him unequal to the work he was compelled to do, and which he was doing at the expense of his health, happiness and success in the world in which he moved.

Upon what grounds does the practice of vegetarianism rest its claims?

The answer is, on no grounds whatsoever, unless it be those of the man who has an "idea" that if he looks over his left shoulder at the moon, or sees a black cat on the thirteenth day of the month, he is dead sure to have bad luck.

And yet it is only when it is ridden to death as a hobby that vegetarianism can be charged with inanity. When it is practiced occasionally and for a limited time, and at irregular intervals, it becomes the useful servant of scientific intelligence. There is a "soul of truth" in vegetarianism, as there also may be, so far as you or I know to the contrary, in the belief that if you see a black tabby on Friday the thirteenth, you will lose regularly at poker for some considerable time thereafter. This soul of truth takes us backward a bit in the natural history of man.

The primitive ancestors of European races, like the savage races of the present time, were naturally fitted for, and therefore "needed," a certain amount of irregularity in their feeding. Sometimes game would be plenty, and sometimes it would be scarce. When it was scarce, or not to be had at all, those primitive ancestors of ours were necessarily limited to a starvation diet. They were very hungry, and their hunger made them keen on the hunt, active, bright-eyed, alert, vigorous and pushing. Then, with a successful kill, there would naturally be a little gorging of meat, followed by a long and lazy rest.

Now, while we, their descendants, are not quite as savage or quite as improvident as were our primitive forefathers of the jungle or the prairies, and while it is true that we are not distressed with alternate scarcity and redundancies of food, we inherit the stomachs and the general digestive machinery of those active old fathers of ours, and a reasonable degree of alternate gorging and starving is good for us. Unfortunately, however, most of us have to attend to business year in and year out, and we cannot lie idle around the woods digesting off our gorges, whereas fasting is not to be thought of by persons who work at occupations very different from hunting.

But we can do this: We can cut down, or cut out, our meat diet at irregular and fairly frequent intervals; go without meat altogether for a week or so; be vegetarians, not regularly but quite irregularly, for short lengths of time. And then when we give meat its inning, we will be better prepared to appreciate it, and to extract from it the health and happiness we need.

The vegetarian is therefore herewith supplied with a "scientific principle" as sound and as negotiable as a golden eagle. But if he adopts it he will have to cut himself in two.

Adamant.

"There are a lot of girls who don't ever intend to get married."

"How do you know?"

"I've proposed to several."